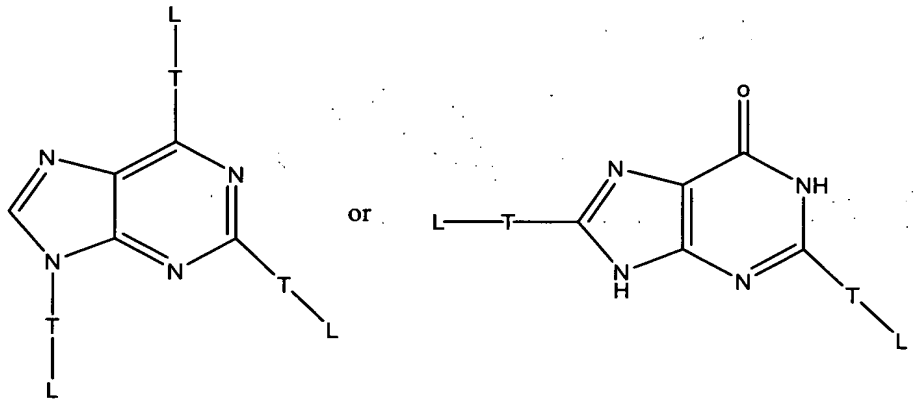
This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

1-30 (Canceled)

31. (Currently amended) A method for preparing a library of compounds of the formula



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wherein:

each tether moiety T is $-NH(R^1)NH-$, $-NH(R^1)O-$, $-NHR^2NH-$, $-NHR^2SO_2NH-$, $-NHR^1-$, $-N(R^4)_2$, -N=N-, O, S, Se, $-P(=O)(O)_2$, NH, OR^2, OR^3, malonato, pyrrolidinyl, piperidinyl, piperazinyl, morpholino, imidazolyl, pyrrolyl, pyrazolyl, indolyl, 1H-indolyl, α-carbolinyl, carbazolyl, phenothiazinyl, phenoxazinyl, tetrazolyl, or triazolyl;

R^1 is alkylene; R^2 is aryl; R^3 is H or C_1-C_{10} alkyl; R^4 is alkyleneoxy; and

each chemical substituent L is, independently, C_1-C_{10} alkyl, substituted C_1-C_{10} alkyl, C_2-C_{10} alkenyl, substituted C_2-C_{10} alkenyl, C_2-C_{10} alkynyl, substituted C_2-C_{10} alkynyl, C_4-C_7 carbocyclic alkyl, substituted C_4-C_7 carbocyclic alkyl, C_4-C_{10} alkenyl carbocyclic, substituted C_4-C_{10} alkenyl carbocyclic, C_4-C_{10} alkynyl carbocyclic, substituted C_4-C_{10} alkynyl carbocyclic, C_6-C_{14} aryl, substituted C_6-C_{14} aryl, heteroaryl, substituted heteroaryl, a nitrogen, oxygen or sulfur containing heterocycle, a substituted nitrogen, oxygen or sulfur containing heterocycle, a mixed heterocycle, or a substituted mixed heterocycle; wherein each of the substituent groups is selected from a group consisting of alkyl, alkenyl, alkynyl, aryl, hydroxyl, alkoxy, benzyl, nitro, thiol, thioalkyl, thioalkoxy and halo; or L is, independently, phthalimido, an ether having 2 to 10 carbon atoms and 1 to 4 oxygen or sulfur atoms, hydrogen, halogen, hydroxyl, thiol, keto, carboxyl, NR^1R^2, $CONR^1$, amidine, guanidine, glutamyl, nitro, nitrate, nitrile, trifluoromethyl, trifluoromethoxy, NH-alkyl, N-dialkyl, O-aralkyl, S-aralkyl, NH-aralkyl, azido, hydrazino, hydroxylamino, sulfoxide, sulfone, sulfide, disulfide, silyl, a nucleosidic base, an amino acid side chain, or a carbohydrate, comprising:

contacting a purine ~~or pyrimidine~~ heterocyclic scaffold having at least two functionalizable atoms, wherein at least one of said functionalizable atoms is blocked, with a mixture of at least six different chemical substituents to append each of said chemical substituents to said heterocyclic scaffold directly to form a substituent-appended scaffold;

deblocking at least one of said blocked functionalizable atoms of said substituent-appended scaffold; and

contacting said substituent-appended scaffold with a mixture of at least six different chemical substituents to append each of said chemical substituents to said substituent-appended scaffold either directly or via a tether moiety covalently attached to one of said functionalizable atoms.

32. (Previously presented) The method of claim 31 wherein said compounds of said library are within 20 mole percent of equimolarity.

33. (Previously presented) The method of claim 31 wherein said contacting steps are carried out in one reaction vessel.

34. (Canceled)

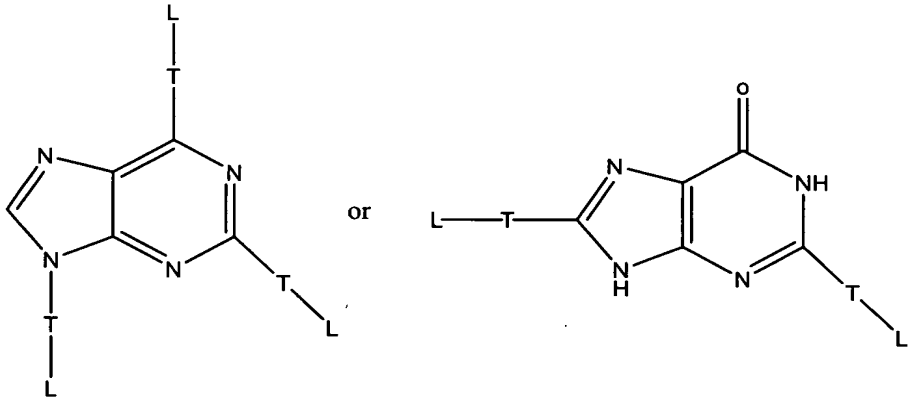
35. (Previously presented) The method of claim 31 wherein said scaffold is contacted with a mixture of at least ten different chemical substituents.

36. (Previously presented) The method of claim 31 wherein said scaffold is contacted with a mixture of at least fifteen different chemical substituents.

37. (Previously presented) The method of claim 31 wherein said method is performed

in solution phase.

38. (Currently amended) A method for preparing a library of compounds of the formula:



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wherein:

each tether moiety T is $-NH(R^1)NH-$, $-NH(R^1)O-$, $-NHR^2NH-$, $-NHR^2SO_2NH-$, $-NHR^1-$, $-N(R^4)_2$, -N=N-, O, S, Se, $-P(=O)(O)_2$, NH, OR^2, OR^3, malonato, pyrrolidinyl, piperidinyl, piperazinyl, morpholino, imidazolyl, pyrrolyl, pyrazolyl, indolyl, 1H-indolyl, α-carbolinyl, carbazolyl, phenothiazinyl, phenoxazinyl, tetrazolyl, or triazolyl;

R^1 is alkylene; R^2 is aryl; R^3 is H or C_1-C_{10} alkyl; R^4 is alkyleneoxy; and

each chemical substituent L is, independently, C_1-C_{10} alkyl, substituted C_1-C_{10} alkyl, C_2-C_{10} alkenyl, substituted C_2-C_{10} alkenyl, C_2-C_{10} alkynyl, substituted C_2-C_{10} alkynyl, C_4-C_7 carbocyclic

alkyl, substituted C_4-C_7 carbocyclic alkyl, C_4-C_{10} alkenyl carbocyclic, substituted C_4-C_{10} alkenyl carbocyclic, C_4-C_{10} alkynyl carbocyclic, substituted C_4-C_{10} alkynyl carbocyclic, C_6-C_{14} aryl, substituted C_6-C_{14} aryl, heteroaryl, substituted heteroaryl, a nitrogen, oxygen or sulfur containing heterocycle, a substituted nitrogen, oxygen or sulfur containing heterocycle, a mixed heterocycle, or a substituted mixed heterocycle; wherein each of the substituent groups is selected from a group consisting of alkyl, alkenyl, alkynyl, aryl, hydroxyl, alkoxy, benzyl, nitro, thiol, thioalkyl, thioalkoxy and halo; or L is, independently, phthalimido, an ether having 2 to 10 carbon atoms and 1 to 4 oxygen or sulfur atoms, hydrogen, halogen, hydroxyl, thiol, keto, carboxyl, NR^1R^2, $CONR^1$, amidine, guanidine, glutamyl, nitro, nitrate, nitrile, trifluoromethyl, trifluoromethoxy, NH-alkyl, N-dialkyl, O-aralkyl, S-aralkyl, NH-aralkyl, azido, hydrazino, hydroxylamino, sulfoxide, sulfone, sulfide, disulfide, silyl, a nucleosidic base, an amino acid side chain, or a carbohydrate, comprising:

contacting a purine ~~or pyrimidine~~ heterocyclic scaffold having at least two functionalizable atoms, wherein at least one of said functionalizable atoms is blocked, with a mixture of at least six different chemical substituents to append each of said chemical substituents to said heterocyclic scaffold via a tether moiety covalently attached to one of said functionalizable atoms to form a substituent-appended scaffold;

deblocking at least one of said blocked functionalizable atoms of said substituent-appended scaffold; and

contacting said substituent-appended scaffold with a mixture of at least six different chemical

substituents to append each of said chemical substituents to said substituent-appended scaffold either directly or via a tether moiety covalently attached to one of said functionalizable atoms.

39. (Previously presented) The method of claim 38 wherein said compounds of said library are within 20 mole percent of equimolarity.

40. (Previously presented) The method of claim 38 wherein said contacting steps are carried out in one reaction vessel.

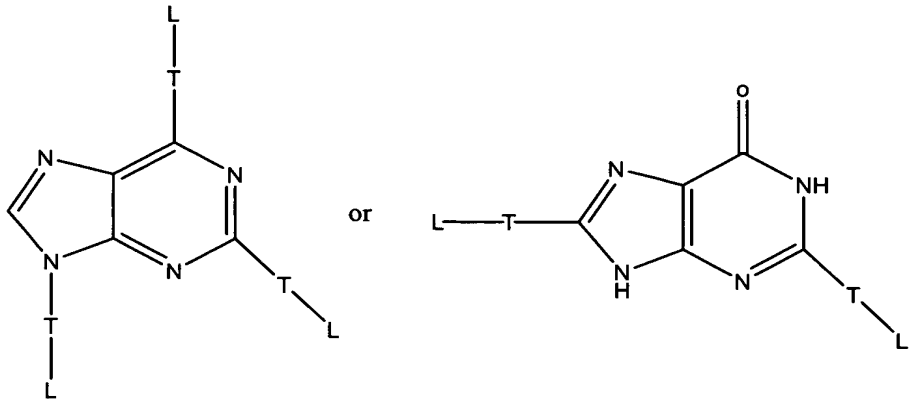
41. (Canceled)

42. (Previously presented) The method of claim 38 wherein said scaffold is contacted with a mixture of at least ten different chemical substituents.

43. (Previously presented) The method of claim 38 wherein said scaffold is contacted with a mixture of at least fifteen different chemical substituents.

44. (Previously presented) The method of claim 38 wherein said method is performed in solution phase.

45. (Currently amended) A method for preparing a library of compounds of the formula:



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wherein:

each tether moiety T is -NH(R^1)NH-, -NH(R^1)O-, -NHR^{2}NH-, -NHR^2SO_2NH-, -NHR^1-, -N(R^4)$_2$, -N=N-, O, S, Se, -P(=O)(O)$_2$, NH, OR^2, OR^3, malonato, pyrrolidinyl, piperidinyl, piperazinyl, morpholino, imidazolyl, pyrrolyl, pyrazolyl, indolyl, 1H-indolyl, α-carbolinyl, carbazolyl, phenothiazinyl, phenoxazinyl, tetrazolyl, or triazolyl;

R^1 is alkylene; R^2 is aryl; R^3 is H or C_1-C_{10} alkyl; R^4 is alkyleneoxy; and

each chemical substituent L is, independently, C_1-C_{10} alkyl, substituted C_1-C_{10} alkyl, C_2-C_{10} alkenyl, substituted C_2-C_{10} alkenyl, C_2-C_{10} alkynyl, substituted C_2-C_{10} alkynyl, C_4-C_7 carbocyclic alkyl, substituted C_4-C_7 carbocyclic alkyl, C_4-C_{10} alkenyl carbocyclic, substituted C_4-C_{10} alkenyl carbocyclic, C_4-C_{10} alkynyl carbocyclic, substituted C_4-C_{10} alkynyl carbocyclic, C_6-C_{14} aryl;

substituted C_6-C_{14} aryl, heteroaryl, substituted heteroaryl, a nitrogen, oxygen or sulfur containing heterocycle, a substituted nitrogen, oxygen or sulfur containing heterocycle, a mixed heterocycle, or a substituted mixed heterocycle; wherein each of the substituent groups is selected from a group consisting of alkyl, alkenyl, alkynyl, aryl, hydroxyl, alkoxy, benzyl, nitro, thiol, thioalkyl, thioalkoxy and halo; or L is, independently, phthalimido, an ether having 2 to 10 carbon atoms and 1 to 4 oxygen or sulfur atoms, hydrogen, halogen, hydroxyl, thiol, keto, carboxyl, NR^1R^2, $CONR^1$, amidine, guanidine, glutamyl, nitro, nitrate, nitrile, trifluoromethyl, trifluoromethoxy, NH-alkyl, N-dialkyl, O-aralkyl, S-aralkyl, NH-aralkyl, azido, hydrazino, hydroxylamino, sulfoxide, sulfone, sulfide, disulfide, silyl, a nucleosidic base, an amino acid side chain, or a carbohydrate, comprising:

contacting a purine ~~or pyrimidine~~ heterocyclic scaffold molecule having a plurality of functionalizable atoms with a mixture of at least six different chemical substituents in one reaction vessel to append each of said chemical substituents to said scaffold either directly or via a tether moiety covalently attached to one of said functionalizable atoms.

46. (Previously presented) The method of claim 45 wherein said compounds of said library are within 20 mole percent of equimolarity.

47. (Canceled)

48. (Previously presented) The method of claim 45 wherein said scaffold is contacted with a mixture of at least ten different chemical substituents.

49. (Previously presented) The method of claim 45 wherein said scaffold is contacted with a mixture of at least fifteen different chemical substituents.

50. (Previously presented) The method of claim 45 wherein said method is performed in solution phase.